

23. (Amended) The lead-frame of claim 16, further comprising:
a semiconductor device mounted on the support surface of the conductive skeleton; and

a molded portion formed over the semiconductor device, the molded portion having one or more flashing portions formed at a peripheral extrusion area thereof and extending into the hole.

24. The lead-frame of claim 23 wherein a flashing portion extending between the peripheral extrusion area and the receptacle extends across a surface of the conductive strip facing away from the molded portion.

25. (Amended) The lead-frame of claim 24 wherein:
the hole is a passage through the conductive strip; and
the flashing portion extends through the passage.

26. The lead-frame of claim 25 wherein the flashing portion forms a button portion on a surface of the conductive strip facing toward the molded portion.

REMARKS

Claims 1-26 are pending. Claims 8-23 and 25 are being amended.

The drawings were objected to for failure to show a "receptacle" and a "conductive strip." The claims are being amended to refer to a "hole" rather than a receptacle. Figures 2, 3, 5, and 6 show holes 8 and 11. Figures 1, 2, 4, and 5 show several conductive strips 3 as described on page 3, lines 4-8. Accordingly, the figures show all of the features of the claimed invention.

Claims 6 and 8-26 were rejected under 35 U.S.C. § 112, first paragraph, as lacking written support in the specification. With respect to claim 6, the Examiner objected to "only on the upper surface of said frame." Page 4 of the specification is being amended to include the language of claim 6. In addition, Figure 3 shows resin flash only on the upper surface of the frame 1. With respect to claims 8-26, the applicant has amended "receptacle" to

“hole” to be consistent with the specification. Because “receptacle” is a synonym for “hole,” no narrowing of the claims is being made. With respect to claims 16, the term “conductive strip” is already supported by the specification, as discussed above.

For the foregoing reasons, claims 6 and 8-26 are supported by the specification.

Claim 1 is rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,319,450 to Chua *et al.* (“Chua”).

The invention recited in claim 1 is not disclosed in Chua. Claim 1 recites a lead-frame that includes a mold and a frame, with the mold having an air vent and the frame having a through hole placed at the outlet of the air vent. Chua simply does not disclose a frame with a through hole positioned at the outlet of the air vent 120. Chua shows a mold 100 with three air vents 120 in Fig. 2 and a lead frame 156 in Fig. 5, but the lead frame 156 is completely solid at the outlets of the air vents 120. The air vents 120 cannot be both the air vent of the mold and through hole of the frame, as recited in claim 1. As a contrasting example, Figure 2 of the present application shows both an air vent 9 of a mold and a hole 8 of a frame.

The applicants do not understand the rejection of claim 1 given the Examiner’s admission, in the discussion of claim 10, that Chua does not teach a hole through the lead-frame. Claim 1 recites a lead frame with a through hole while claim 10 recites a hold through the lead frame. Chua cannot disclose a lead frame with a through hole in claim 1 given that Chua does not teach a hold through the lead-frame.

Accordingly, claim 1 is not anticipated by Chua.

Claims 2-9, 12, 16-19, and 23-26 were rejected under 35 U.S.C. § 103 as being unpatentable over Chua.

Chua does not teach or suggest the invention recited in claims 2-7, which depend on claim 1. As discussed above, Chua does not teach a frame having a through hole placed at the outlet of an air vent of a mold. In addition, there is no suggestion in Chua or the general knowledge in the art to provide such a frame with a through hole at the outlet of an air vent of a mold. For that reason alone, claims 2-7 are nonobvious in view of Chua.

In addition, claims 2-7 each recite other elements not taught or suggested by Chua. Claim 2 recites that the through hole has an ellipsoidal section having a center positioned on the axis of the air vent. The Examiner admits that Chua does not teach a through hole with an

ellipsoidal section, but asserts that it would have been obvious "to find the optimal diameter dimension of the hole and the air vent, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art." That assertion is incorrect for several reasons. First, the Examiner quotes a section of Chua (col. 3, lines 24-42) that deals only with the air vent 120 without mentioning any through hole in addition to the air vent. Second, even if it were routine to discover an optimum diameter of a hole, that does not provide any suggestion of changing the shape of the hole or positioning the hole so that its center is positioned on the axis of an air vent.

With respect to claims 3-7, the Examiner made similar claims about it being obvious to discover an optimum value of a variable, but the Examiner did not indicate any suggestion in the art for the structures of claims 3-7 that do not involve optimizing variables. In particular, claim 3 recites that the through hole has its center positioned on the axis of the air vent. There is nothing in Chua or the general knowledge in the art suggesting that one should or could position a through hole of a frame in the axis of an air vent of a mold. Claims 4-7 depend on one of claims 2 and 3, and thus, also include the additional features discussed above.

For the foregoing reasons, claims 2-7 are nonobvious in view of Chua.

Although the language of claims 8-9, 12, 16-19, and 23-26 differs from that of claims 1-7, the allowability of claims 8-9, 12, 16-19, and 23-26 will be apparent in view of the above discussion.

Claims 10-11, 13-15, and 20-22 were rejected under 35 U.S.C. § 103 as being unpatentable over Chua in view of U.S. Patent No. 4,777,520 to Nambu *et al.* ("Nambu").

Chua and Nambu do not teach or suggest the invention recited in claims 10-11, 13-15, and 20-22. Claims 10-11 and 13-15 depend on claim 8, which recites an integrated circuit with a lead-frame external to a molded portion and having a hole adjacent to a peripheral area of the molded portion. As discussed above, Chua does not teach or suggest a lead-frame with a hole. Likewise, Nambu does not teach or suggest an external lead-frame having a hole adjacent to a peripheral area of a molded portion. Instead, Nambu shows a hole 18 in a molded resin 15 that partially encloses leads 11. There is no hole in any of the leads 11, and the leads are the only structures shown in Nambu that are even partially external to the molded resin 15. Accordingly, claims 10-11 and 13-15 are nonobvious in view of Chua and Nambu.

Although the language of claims 20-22 differs from that of claims 10-11 and 13-15, the allowability of claims 20-22 will be apparent in view of the above discussion.

If the Examiner continues to assert Chua against any of the claims, the applicants respectfully request the Examiner to contact the undersigned attorney for a telephone interview because the application of Chua against the pending claims is not understood as Chua clearly shows a hole only on the mold 100 and not on the lead frame 156.

The Commissioner is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned **"Version With Markings to Show Changes Made."**

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

Claims 8-23 and 25 are being amended as follows:

8. (Amended) An integrated circuit, comprising:
a semiconductor device;
a molded portion formed around the semiconductor device and having a flashing portion of molded material extruded from the molded portion at a peripheral area thereof; and
a lead-frame external to the molded portion and having a ~~receptacle~~hole adjacent to the peripheral area of the molded portion having the flashing portion extruded therefrom, the flashing portion at least partially filling the ~~receptacle~~hole.
9. (Amended) The integrated circuit package of claim 8 wherein the ~~receptacle~~hole is formed on an axis passing through the flashing portion.
10. (Amended) The integrated circuit package of claim 9 wherein the ~~receptacle~~hole is a through-hole extending completely through the lead-frame.
11. (Amended) The integrated circuit package of claim 10 wherein the flashing portion at least partially filling the ~~receptacle~~hole includes a first portion formed on a first surface of the lead-frame facing away from the molded portion and a second portion formed on a second surface of the lead-frame facing toward the molded portion.
12. (Amended) The integrated circuit package of claim 9 wherein the ~~receptacle~~hole is a recess formed in the lead-frame
13. (Amended) The integrated circuit package of claim 9 wherein the ~~receptacle~~hole is substantially round in shape.

14. (Amended) The integrated circuit package of claim 9 wherein the ~~receptacle-hole~~ is substantially elliptical in shape.

15. (Amended) The integrated circuit package of claim 14 wherein the ~~receptacle-hole~~ is spaced a predetermined distance away from the extrusion of the flashing portion from the molded portion.

16. (Amended) A semiconductor lead-frame for an integrated circuit having a molded portion formed thereover, the molded portion having one or more flashing portions formed at peripheral extrusion areas thereof, the lead-frame comprising:

a conductive skeleton having a support surface and a plurality of conductive strips extending upwardly from the surface, the conductive strips defining an air vent zone of the surface that is structured for placement adjacent to one of the peripheral extrusion areas, the air vent zone including a ~~receptacle-hole~~ in the surface for receiving a portion of one of the flashing portions.

17. (Amended) The lead-frame of claim 16 wherein the ~~receptacle-hole~~ is a recess formed in a surface of the conductive strip facing away from the molded portion.

18. (Amended) The lead-frame of claim 16 wherein the ~~receptacle-hole~~ is aligned with the flashing portion.

19. (Amended) The lead-frame of claim 16 wherein the ~~receptacle-hole~~ is a passage through the conductive strip.

20. (Amended) The lead-frame of claim 19 wherein the ~~receptacle-hole~~ is substantially circular in shape.

21. (Amended) The lead-frame of claim 19 wherein the ~~receptacle-hole~~ is substantially ellipsoidal in shape.

22. (Amended) The lead-frame of claim 16 wherein the ~~receptacle~~-hole is spaced a predetermined distance away from the peripheral extrusion area.

23. (Amended) The lead-frame of claim 16, further comprising:
a semiconductor device mounted on the support surface of the conductive skeleton; and

a molded portion formed over the semiconductor device, the molded portion having one or more flashing portions formed at a peripheral extrusion area thereof and extending into the ~~receptacle~~hole.

25. (Amended) The lead-frame of claim 24 wherein:
the ~~receptacle~~-hole is a passage through the conductive strip; and
the flashing portion extends through the passage.

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